



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/589,005	08/10/2006	Garry Robert Nunn	6002-1098	4622
466 7590 06/23/2010 YOUNG & THOMPSON 209 Madison Street Suite 500 Alexandria, VA 22314			EXAMINER VAN OUDENAREN, SARAH A	
			ART UNIT 1793	PAPER NUMBER
			NOTIFICATION DATE 06/23/2010	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

DocketingDept@young-thompson.com

Office Action Summary

Application No.

10/589,005

Applicant(s)

NUNN, GARRY ROBERT

Examiner

SARAH VAN OUDENAREN

Art Unit

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 March 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 28-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 28-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/GS/US)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 28-35 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 28 includes a newly added limitation of forming an opaque aqueous crystalline biogenic silica. Such a limitation is not adequately taught in the specification and is therefore considered new matter by examiner.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 28-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Corner (European patent No.: 0301857 A2, cited IDS reference) in view of Stephens et al (US Patent No.: 6,375,735 B1).

Regarding claims 28-30 and 32, Corner teaches the biogenic silica is obtained by the controlled burning of biogenic materials containing silica, such as rice hulls, rice stalks, esquitum (horsetail weed), bagasse, certain bamboo palm leaves, particularly palmyra, pollen and the like (considered incinerating a silica bearing organic source). The burning of biogenic material is done under controlled conditions so that at least some amount of crystalline silica can be present. Biogenic silica such as rice hull ash is dissolved in strong alkali solution effective to provide a solution of soluble silica such as sodium or potassium silicate at above ambient temperature (considered preheated to temperature up to about 65° C) or atmospheric pressure or both. The strong alkali solution should have a pH of about 12 or greater and can be pure sodium hydroxide (considered hydroxides of sodium). Experiments were conducted at room temperature, 100° F, 212° F, 275° F (overlapping heating temperature range of 100-300° C) containing rice hull ash in sodium hydroxide. Rice hull ash in sodium hydroxide to form solution of sodium silicate which were titrated for total alkali and total solids from which the silica was computed (Col.4 lines 3-50 and Col.5 lines 10-11).

Corner does not expressively mention incinerating a silica bearing organic source at temperature range from about 700-1200 C.

Stephens teaches incinerating of rice hulls, furnaces have been designed to operate at extremely high temperatures without regards to the form of silica produced by this incineration. The phase diagram of silicon dioxide indicates that a transition from amorphous to crystalline forms known as tridymite and cristobalite takes place at temperatures above 2000° F(1093° C) when the silica is in pure state. However, the

incineration of biogenic material such as rice hulls at temperature of 1800-2000° F range for any prolonged exposure period lead to the formation of crystalline silica because the transition temperature from amorphous to crystalline is reduced by the presence of other components of the original rice hulls (Col.7 lines 25-45). Further, Stephens teaches that agricultural waste materials or biomass have potential useful fuel value and are used as low grade fuel to produce steam and electricity in a number of locations (col 7, lines 25-30). Stephens teaches aqueous silicate solutions being formed under pressure and heat in a vessel (col 6, lines 1-10).

It would have been obvious to one of the ordinary skill in the art at the time of invention to modify the method of Corner to include the step of incinerating and applying pressure to a silica bearing organic source such as rice hull at temperature of 1800-2000° F to transition from amorphous to crystalline form taught by Stephens to have potential useful fuel value and are used as low grade fuel to produce steam and electricity in the number of locations, especially near rice milling and sugarcane processing operations taught by Stephens.

It is noted that Stephens teaches the obtained crystallite form to be crystobalite which applicant teaches in the instant disclosure to contain no carbon (applicant's specification pg 12, lines 1-5). Examiner maintains that as crystobalite is a substantially similar material as that of the instant invention, the crystobalite of Stephens formed when Corner is modified to include the incineration of Stephens, would be opaque.

Regarding claim 31, Stephens teaches silica bearing organic source constitute of 15-28% by weight of, sodium concentrations in range of 4-9.5% by weight and water

concentration being in range of 55-81% by weight (overlapping claimed range, Col.13 lines 65-68 and Col.14 lines 1-3).

Regarding claim 33, neither Stephen nor Comer does not expressly mention silica bearing organic source is proportion of about 320g of incinerated rice hulls to the alkaline solution of about 160g of an hydroxide or hydroxides and 3 liters of water but Stephen teaches wide range of amount used for incinerated biogenic organic source, water and alkali solution as described in Claim 31, it would have been obvious to optimize to select the claimed amount based on preference or other requirement to have potential useful fuel value and are used as low grade fuel to produce steam and electricity in the number of locations, especially near rice milling and sugarcane processing operations taught by Stephens (MPEP 2144.05 [R-5]). Comer mention varying the proportions of biogenic silica to strong alkali solutions and higher ratios can be obtainable as well and the solid concentration can be controlled by water addition up the point where the solution becomes viscous (Col.7 lines 1-9) so it would have been obvious to optimize to select the claimed amount based on preference or other requirement with low cost equipment and low energy as taught by Comer.

Regarding claims 34-35, Comer teaches rice hulls are continuously added to the top of the furnace and the ash is continuously removed from the bottom but does not expressly mention pressure release valve arranged for releasing excessive pressure within the vessel but it would have been obvious that the pressure release valve arranged for releasing excessive pressure within the vessel when utilizing high pressure

at high temperatures which provides the use of less energy intensive process as taught by Corner.

Response to Arguments

The arguments submitted 3/24/2010 have been fully considered in conjunction with the amendments to instant claim 28 and 29. Currently, claims 28-35 are pending.

Applicant has amended claim 28 to includes the silica in a crystalline form and free of carbon. Additionally, applicant has included applying pressure in addition to applying heat to the organic source and an alkaline solution in a vessel to form an opaque silica.

A new 112 1st new matter rejection has been included above over the "opaque" limitation which has been newly added. It is noted that applicant teaches an opaque liquid biogenic silica (pg 11, lines 28-29) however there is no teaching of this silica being crystalline. Further, the embodiment which the teaching of an opaque silica refers to includes process steps which are not reflected in the instant claim language, namely a completely different temperature range.

In view of these amendments, applicant argues that Corner teaches a water white silicate and substantially amorphous including 2-8% carbon. For these reasons, applicant alleges that Corner differs from the instant invention.

Examiner notes that arguments and agrees that Corner teaches a differing color, carbon content, and form, however the rejection is maintained insofar as the modifying reference of Stephens includes cristobalite. Based upon applicant's own disclosure, cristobalite is considered to be free of carbon (pg 12, lines 1-5). Further, as the process

of Corner as modified by Stephen is substantially similar, it is considered by examiner that the cristobalite which is ultimately formed would be opaque.

Applicant argues that there is not motivation to modify Corner with Stephens insofar as it would deter from the intended use of Corner. Examiner maintains that the method of Corner is correctly modified by Stephens insofar as by utilizing the method of Corner with the incineration of Stephens, an additional use is obtained, namely that of having a potential useful fuel value and are used as low grade fuel to produce steam and electricity in a number of locations (col 7, lines 25-30).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SARAH VAN OUDENAREN whose telephone number is

(571)270-5838. The examiner can normally be reached on Monday-Thursday, 9:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Melvin Curtis Mayes can be reached on 571-272-1234. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SARAH VAN OUDENAREN/
Examiner, Art Unit 1793
June 15, 2010

/Melvin Curtis Mayes/
Supervisory Patent Examiner, Art Unit 1793